



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,981	09/17/2003	Felix C. Fernandes	TI-35537	8621
23494 7590 07/13/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER HUBER, JEREMIAH C	
			ART UNIT 2621	PAPER NUMBER
			NOTIFICATION DATE 07/13/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com  
uspto@demail.itg.ti.com

<b>Office Action Summary</b>	Application No. 10/666,981	Applicant(s) FERNANDES, FELIX C.	
	Examiner Jeremiah C. Huber	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 2 and 3 are objected to because of the following informalities: Claim 1 from which claims 2 and 3 depend recites steps a-c. Claim 2 recites another step a within step c, Claim 3 recites limitations a-c. Since claim 1 already recites steps a-c, claims 2 and 3 should either be changed to recite new steps such as d or e, or the step lettering should be removed. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (5748247) in view of Yim (6452969).

In regard to claim 1 Hu discloses a method for motion vector refinement including:

providing a target block a corresponding motion vector estimate and a reference frame (Hu col. 3 line 46 to col. 4 line 5 note motion vector estimates are provided by parent and neighboring child blocks also note col. 1 lines 47 to 61 motion vectors are used with reference frames);

when a boundary of a first reference block located by said motion vector estimate in the reference frame does not align with a boundary of any block in the reference frame,

defining a motion vector search window by adjoining blocks along the boundaries of the first reference block in the reference frame (Hu col. 3 line 46 to col. 4 line 5 note Hu must inherently adjoin blocks along boundaries to perform searches, also note col. 4 lines 5 to 14 the 'search window' can include multiple areas for a candidate vector check);

refine the motion vector estimate by searching over potential motion vectors which locate potential blocks within the search window (Hu col. 4 lines 5 to 14 note vector with lowest DFD is selected);

It is noted that Hu does not disclose details of performing motion vector refinement in the DCT domain. However Yim discloses a method of performing inverse motion compensation in the DCT domain (Yim col. 9 line 17 to col. 14 line 24 for a detailed description of process). Such inverse motion compensation corresponds to the candidate motion vector check disclosed in Hu (Hu col. 4 lines 5-14). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including the inverse motion compensation in the DCT domain technique taught by Yim in the invention of Hu in order to avoid introducing undesirable artifacts as suggested by Yim (Yim col. 3 lines 18-23).

In further regard to claims 1-2 it is noted that the claims state performing either step (b) or step (c), therefore the art need only anticipate either steps (b) or (c) in order to anticipate the claims. Claim 2 is directed entirely to step (c).

In regard to claim 3 refer to the statements made in the rejection of claim 1 above. Yim further discloses the use of macroblocks as 2x2 arrays of 8x8 DCT blocks (Yim col. 5 line 46 to col. 6 line 19). Hu further discloses that the search window lies within a 3x3 array of reference frame blocks (Hu col. 4 lines 5-14 note search windows are the size of the current block).

### ***Allowable Subject Matter***

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the "or" limitation were to be removed.

Claim 2 recites repeating DCT coefficients along aligned boundaries. The closest art is Hu in view of Yim, which discloses DCT domain motion vector refinement as stated in the rejection of claims 1 and 3 above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mori et al disclose a method of transcoding MPEG2 to MPEG4 that includes decoding only adjoining DCT blocks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber  
Examiner  
Art Unit 2621

*Mehrdad Dastouri*  
MEHRDAD DASTOURI  
SUPERVISORY PATENT EXAMINER  
TC 2600